

3
639.9
SE-1-7
1 C.2
S
639.9
SE-1-7
1



EASE RETURN

STATE DOCUMENTS COLLECTION

OCT 7 - 1985

JOB PROGRESS REPORT

RESEARCH PROJECT

MONTANA STATE LIBRARY,
1515 E. 6th AVE.
HELENA, MONTANA 59620

State: Montana

Project No. SE-1-7

Title: Statewide Endangered Species
Research

Job No. 1

Title: Northern Rocky Mountain Wolf
Investigations

Period Covered: July 1, 1984 through June 30, 1985

Prepared by: Dr. Robert R. Ream

Approved by: Glenn Erickson

Date: September 1985

Funding for this study and report is through a cooperative agreement with the State of Montana Department of Fish, Wildlife and Parks under Section 6 of the Endangered Species Act. No parts of the report may be reproduced, nor quoted without permission of the authors.

DATE 12/1/00

i

Table of Contents

1 Background	1
2 Acknowledgements	2
3 Introduction	4
4 Wolf Distribution and Numbers	5
4.1 Trapping and Radio Collaring	5
4.2 Track Surveys and Wolf Reports	5
4.3 Mortality	9
5 Movements of Radio-Collared Wolves	9
5.1 Wolf W8401	9
5.2 W8550	10
6 Food Habits	14
7 Summary	16

List of Figures

Figure 1:	Study Area Showing Approximate Range of Magic Pack and Incidental Wolf Reports	7
Figure 2:	Movements of W8401- August 28, 1984 to March 15, 1985	11
Figure 3:	Movements of W8401 - March 15 to June 30, 1985	12
Figure 4:	Movements of W8550 from May 18, 1985 to June 30, 1985	13
Figure 5:	Distance of W8550 from the homesite - 1985	14

List of Tables

Table 1:	Times of day W8550 was found further than 0.75 km away from homesite	15
----------	--	----

WOLF ECOLOGY PROJECT ANNUAL REPORT JULY 1984 THROUGH JUNE 1985

1 Background

This annual report is the first annual report of the Wolf Ecology Project since it has been funded through the State of Montana Department of Fish, Wildlife and Parks, under Section 6 of the Endangered Species Act. Because of increasing evidence of natural wolf recovery occurring in the Glacier National Park and Flathead National Forest area in Montana and increasing evidence of wolves in Idaho, a joint proposal was submitted by the states of Montana and Idaho for Section 6 funding in 1983. Funding was approved in 1984 and the state of Montana is funding this project through the Montana Cooperative Wildlife Research Unit at the University of Montana. Dr. Robert Ream, Professor of Forestry, has directed the Wolf Ecology Project since its inception in 1973 and is directing the current effort. The remainder of this section will give background on the wolf in Montana and the Wolf Ecology Project. Those who are familiar with past work of the project should skip to the Introduction section, which covers the beginning of the current Section 6 research.

The Wolf Ecology Project was initiated in the summer of 1973 to begin to collect information on the current status of wolves in Montana. Later that year, the Northern Rocky Mountain Wolf *Canis lupus irremotus* was placed on the endangered species list. The first 6 years of the project were spent collecting information and examining areas around the state to determine if and where wolves were present (Ream and Mattson, 1982). In 1978, we received funding from the Office of Endangered Species, U.S. Fish & Wildlife Service, Washington, to initiate more intensive ecological research in the area we were most likely to find wolves present. In April 1979, a female wolf was captured and radio-tagged in the North Fork Flathead River drainage about 6 miles northwest of Glacier National Park (Ream and Mattson, 1982). Her radio operated for 16 months, and we were able to follow her tracks in the snow the following winter (1980-81). During the 2 years she was intensively followed, we found no evidence of another wolf in the Flathead drainage (Boyd, 1982, Ream et al, 1985). In the fall of 1981 a wolf with larger tracks and black in color, showed up in the same area. The following winter, a pair of wolves was tracked in the snow and in the spring of 1982, they had a litter of at least 7 pups. Since 1982 there has been an increasing number of wolf tracks, sightings, and other sign in the

North Fork, particularly south of the Canadian border. In the winter of 1984-85 we estimate 7-10 wolves were present in the area.

2 Acknowledgements

We would like to acknowledge the support and help of individuals and organizations who have supported this project over the past 12 years. The Northern Rocky Mountain Wolf Recovery Team with Dennis Flath and Bart O'Gara as chairmen, have provided help and encouragement since the team was formed in 1974. Team member, Norton Miner, U.S. Fish & Wildlife Service in Billings, helped obtain vehicles to use in reconnaissance work early in the project. The World Wildlife Fund supported our efforts at a critical time leading to intensive field work in the Flathead area. The U.S. Fish & Wildlife Service, Office of Endangered Species in Washington D.C., particularly John Spinks, Amos Eno, and Ron Nowak, were particularly helpful in providing support and encouragement during the intensive ecological work from 1978-1981. The Alberta Fish and Wildlife Service, through John Gunson, funded an investigation in the Livingstone Range in 1981-82, at a time when it appeared that we only had one wolf in the North Fork and that was the nearest area with breeding pairs (Harris, 1983). Cliff Martinka, Glacier National Park, put some project personnel on volunteer status in recent years. Ron Marcoux and Glen Erickson, Montana Department of Fish, Wildlife and Parks, were very helpful in obtaining the Section 6 funding that supports our current efforts. The School of Forestry and Montana Cooperative Wildlife Research Unit, have supported our efforts in many ways over the past 12 years. Ken Wall, with the University of Montana Wilderness Institute, has been very kind to tutor us in the use of the computer facilities on campus.

The following biologists, in chronological order, have been on the project payroll: Gary Day, Ursula Mattson, Joe Smith, Diane Boyd, Rich Harris and Mike Fairchild. All have worked many hours beyond those they were paid for. Diane Boyd and Ursula Matson continued to collect data and information during the years when they were not on the payroll and Diane has settled in the North Fork study area.

The project could not have collected the amount of information it has without the aid of numerous volunteers and work-study students. These include: Russ Beuch, Pam Broussard, Dennis Daneka, Mike Fairchild, Sharon Gaughan, Karen Gelman, Rich Harris, Ann Henry, Rob Jensen, Rick Johnson, Gina Mariani, Dean Marsh, Jill Reifschneider, Carol

Schmidt, Mike Sickles, and Heidi Svoboda. All have spent at least one quarter of a year working in the field. Many other individuals have contributed days, and weeks, to helping the field work in a variety of ways.

A number of individuals and agencies in the study area deserve special mention for their contributions to this research effort. Personnel of the Glacier View Ranger District, Flathead National Forest, have been most helpful in providing maps, advice and logistic support, particularly Rangers Dick Call and Tom Hope, and Wildlife Biologist Bruce Hird. Bob Hensler, Wildlife Biologist in the Supervisor's office has assisted in numerous ways.

Jerry DeSanto, District Ranger, Glacier National Park, has assisted the project over the past 5 years by making valuable observations of wolf tracks in winter, by making several cabins available for winter use, and by sharing his vast knowledge of the park. Research Biologist Cliff Martinka has provided a considerable amount of advice and logistic support to the project over the years.

Montana Department of Fish, Wildlife and Parks regional supervisor Tom Hay and biologist Jim Cross have been very helpful to project personnel in a variety of ways.

Doing research on animals as far-ranging as wolves is somewhat complicated by the fact that the study area and the wolves straddle an international border. We greatly appreciate the kindness and understanding shown to project personnel by both U.S. and Canadian customs and immigration services personnel.

We also greatly appreciate the use of cabins at Moose City that have been most generously offered for our use by George Ostrom and the Moose City property owner's association. Use of the cabins and the airstrip has greatly facilitated project work.

British Columbia Fish and Wildlife Branch regional biologist Ray DeMarchi has been most helpful to the project in obtaining permits and providing logistic support. Over the past 6 years, Border Grizzly Project field personnel, and director Dr. Charles Jonkel, have had a close working relationship with this project, at times sharing the same cabin. All have been most helpful.

Finally, we need to give a very special thanks to Bruce McLellan and his wife Celine.

They have contributed so much to the wolf project over the years that we consider them part of it. Bruce has been studying grizzly bears in the same area for 8 years, and has provided us with some of the most basic information that has kept our research going, even in years when we lacked funding. He most recently captured and radio-tagged a lactating female wolf on May 18, 1985, using one of our collars. Bruce and Celine's friendship and support has been greatly appreciated by all wolf project personnel.

3 Introduction

A continuing goal of the project is to determine wolf population size and distribution in northwest Montana. Wolves dispersing from Canada provide the only opportunity for natural recovery of wolves in the U.S. Rockies. In the event that recovery is achieved, Canadian wolves in the border region will still strongly influence the ecology of wolves in the U.S. Thus the study area, like the wolves themselves, straddles the international border.

Similar resource development projects (e.g., logging, oil and gas exploration) in progress immediately north of the border are proposed for many areas of the U.S. within potential wolf range. American land managers have the opportunity to develop guidelines for coordinating resource development with wolf recovery from essentially the same ecosystem.

Additional goals of the project are to learn more about the ecology of wolves in the northwest Montana ecosystem. Special emphasis is placed on learning more about the food habits and prey base of wolves in this area. We must try to document those aspects of wolf ecology that might cause controversy, such as competition with human hunters and livestock depredation.

Radio-telemetry has proven to be the only tool to objectively study free-ranging wolves in this area. Telemetry provides the capability of monitoring an animal at a reasonable distance to avoid disturbing it. During this early phase of wolf recovery in the U.S. we are being particularly careful not to "push" radio collared wolves out of the areas that they select as part of their home range. Tracking is done from roads and trails where possible, but lack of roads in much of the study area and great distances travelled by wolves necessitates tracking from an airplane. Without telemetry, there would have been no way to accurately document wolf movements in the study area during the past year.

4 Wolf Distribution and Numbers

4.1 Trapping and Radio Collaring

Following several wolf sightings and numerous wolf reports on the British Columbia side of the North Fork of the Flathead River Valley, a trap line was set out in mid-August 1984. One hundred and fifty-five trap nights culminated in the capture of a young adult male wolf (W8401) on August 26.

Trapping attempts resumed in October and November, during a brief warm period in February, and late March to late May without a successful capture. A black wolf was caught on March 25 but pulled free of the trap upon the approach of the trapper.

On May 18, 1985 Canadian bear biologist Bruce McLellan captured a white, lactating female wolf (W8550) in a bear snare about ten km. north of the border in the North Fork. He obtained a wolf radio collar from our camp and collared her before release.

We located W8550 from an airplane on May 26 and observed her nursing seven pups. All wolf traps were pulled from the study area at the end of May to avoid any possibility of capturing pups while they were still small. Trapping will resume in September 1985 when the pups will be large enough to wear radio collars.

4.2 Track Surveys and Wolf Reports

Although W8550 was not radio tagged until May 1985, the presence of her pack was well established since the previous autumn. The same persistent snows and cold temperatures which hampered trapping provided good, continuous opportunities for track surveys. The tracks of this pack (a.k.a. "the Magic Pack") were encountered regularly from mid-October through the present on both sides of the international border (fig 1). Track counts of the Magic Pack totaled four to six wolves throughout the winter of 1984-85.

Snow tracking and aerial observations of W8401 indicated that he was alternately paired and alone from November 1984 to June 1985. In late November W8401 was radio tracked to a moose carcass about fifteen miles north of Columbia Falls, MT. Tracks of two wolves were seen leaving the feeding site. Tracks of a pair were again found in early December in the border area that W8401 was frequenting at the time. On December 31,

W8401 was seen from the air lying alone in the middle of a 10 ha.(24 acre) clearing. Tracks in the snow implied that he was alone. Ground tracking W8401 through January and February usually turned up just a single set of tracks. There were times, though, that it seemed possible that tracks of a second wolf could be present amidst the numerous ungulate tracks without being detected.

Tracks of a second wolf were verified alongside W8401's throughout March and April 1985. On a May 18 radio tracking flight, W8401 was observed with another wolf. The two were lying in a large meadow 10 km. north of Polebridge Ranger Station in Glacier National Park.

On June 10, W8401 was radio tracked near Goat Haunt Ranger Station, Glacier N. P. Independent track reports of a single wolf in the vicinity of Goat Haunt R. S. during the same time period strongly suggests that W8401 was present alone. On June 21, W8401 was seen on a radio tracking flight walking alone out of the forest about 100 meters and lying down at the edge of an aspen grove.

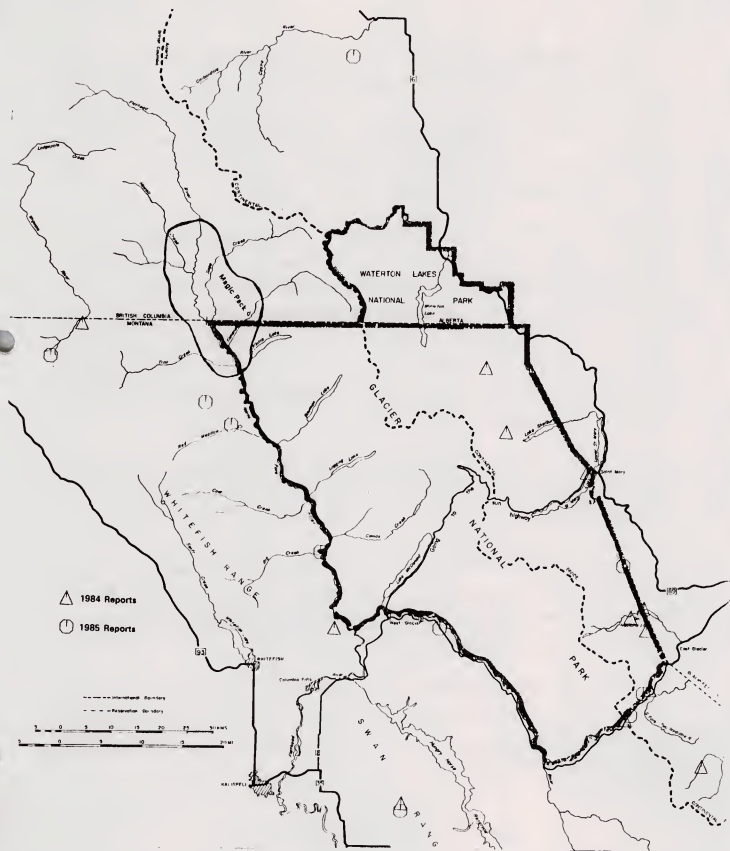
Additional wolf track surveys were conducted while snow cover was present. Surveys were made on the Glacier View Ranger District, Flathead National Forest, up the Trail, Teepee, Whale, Moose, Red Meadow, Hay, Coal and Big Creek Drainages. Tracks of a single wolf, probably W8401, were discovered up Big Creek on March 9. He had been previously radio located several miles on either side of the Big Creek tracks and was found only five miles away on March 10.

Several wolf track and sighting reports were received from North Fork of the Flathead residents (fig 1). Where access was granted to project personnel to investigate these reports, no evidence substantiating the presence of wolves other than W8401, his intermittent partner, and the Magic Pack was collected during winter 1984-85.

Wolf reports have irregularly, but persistently, trickled in from the region of the Swan Range, east of Kalispell. A small portion of the Swan Front was reconnoitered from March 4-6, including Krause Creek, Noisy Creek, Wolf Creek, Bear Creek and Peter's Ridge. A lot of coyote, but no wolf tracks, were seen during this brief survey.

Tracks of a pair of wolves were reported on November 17 and 24, 1984 and April 9,

Figure 1: Study Area Showing Approximate Range of Magic Pack and Incidental Wolf Reports



1985 in the vicinity of East Glacier, MT., by Ursula and Dick Mattson. Numerous other individuals have reported wolf sightings along the eastern and southern periphery of Glacier N. P. and on the adjacent Blackfoot Indian Reservation and the U. S. Forest Service lands.

We examined some of this vast region from April 26 through May 6, 1985. Fresh wolf tracks and scats were found along the eastern boundary of the park during this survey. A return trip to the area from June 16 to 21 failed to turn up additional sign or solicit responses to howling. However, conditions were extremely poor (i.e., dry) for tracks and access difficult to many potential homesite habitats. Chances are excellent that a pack exists along the eastern periphery of Glacier National Park.

While radio tracking W8401 into the Wigwam River drainage, just west of the North Fork of the Flathead, we talked with an outfitter who claimed to have seen tracks of a wolf pack throughout the winter of 1983-84. He did not see wolf tracks in the Wigwam during this past winter of 1984-85. Without radio collars on any Magic Pack members during the previous winters we could not tell whether the wolves in the Wigwam and North Fork were the same. This will be investigated during the coming year. Since the headwaters of the Wigwam lie in the United States another breeding unit there could be especially important to wolf recovery in the U.S.

In June 1985, students of a wolf ecology class offered by the Wildlands Research Institute, San Francisco State University, visited the North Fork of the Flathead. Led by Ursula Mattson, they performed a series of surveys in the North Fork for wolf sign.

From June 15 -20 they surveyed the northern portion of the Flathead Valley, north of the known range of the Magic Pack. No wolf tracks were encountered over 46 km. of hiking on dirt roads. Five possible wolf scats (> 30 mm. diameter) were collected. No wolves responded to howling on the evenings of June 15 and 16.

The class spent three days (June 22-24) on the Glacier View Ranger District. Fifty - nine km. of surveys in the Teepee, Red Meadow, Moose, Whale, and Hornet Creek drainages failed to turn up tracks. Several large canid scats were seen but could not be positively identified as wolf.

The last three days of the WRI survey (June 25-27) were spent in the northwest corner of Glacier N. P. Fifty-six km. of hiking by the group resulted in the discovery of very fresh wolf tracks by one to two wolves. These tracks were found within the previously defined range of the Magic Pack.

4.3 Mortality

No cases of wolf mortality have been documented during the past year. The wolf report that prompted last summer's trapping effort was of six pups. The previous year no pups were reported and in 1982 seven pups were seen. Thus, at least thirteen pups have been born in the territory of the Magic Pack from 1982 to 1984. An adult male affiliated with the 1982 litter was killed in a trapping incident in the summer of 1982. At most, there seemed to be 7-10 wolves in the North Fork during the winter of 1985 out of a potential of 14. The difference may be due to mortality, dispersal, and/or miscounting. There was one unconfirmed report of a wolf being shot in the North Fork, B.C. in October, 1984.

It is currently unlawful to kill wolves in hunting districts 4-1 and 4-2 of the B. C. Fish and Wildlife Branch which contain the Canadian portions of the North Fork of the Flathead and Wigwam River watersheds.

The province of Alberta allows licensed big game hunters to shoot one wolf and licensed trappers to take wolves.

The Endangered Species Act gives legal protection to wolves on the U. S. side of the border.

5 Movements of Radio-Collared Wolves

5.1 Wolf W8401

W8401 was captured in the North fork of the Flathead drainage, approximately seven km. north of the U. S. - Canadian border. Seventy-four radio locations of W8401 range from 20 km. north to 50 km. south of the border from capture to June 30, 1985.

The capture point of W8401 was in the heart of what was later defined as the territory of the Magic Pack. In fact, he was captured less than one km. away from W8550's

eventual capture site and right between two Magic Pack homesites of 1982 and 1985. Wolves were seen by an oil company engineer crossing the road very near W8401's capture site in July 1984. Thus, it seems highly probable that W8401 represents one of the first pups of the Magic Pack to mature and disperse.

Fall to early winter radio locations on W8401 show him "bouncing" back and forth between the Magic Pack territory and various long distance forays (fig. 2).

From January to mid-March 1985, W8401 primarily inhabited a white-tailed deer and elk winter range in Glacier N. P. 14 km. south of Polebridge Ranger Station.

With decreasing snow depths and dispersal of prey species in late March, W8401 began expanding the extent of his movements. For the next two months he and his partner remained in Glacier N. P. travelling up and down the North Fork (fig. 3).

On May 20, W8401 began a series of long distance moves which took him to the Wigwam River in Canada, back to the interior of Glacier N.P. (near Logan Pass), north to Waterton Lake, and back to the North Fork. After a week's stay in the area near Polebridge, W8401 traveled to the headwaters of the North Fork where he remained for the duration of this report period

5.2 W8550

As previously mentioned, W8550 was trapped in a bear snare on May 18, 1985. From May 18 through June 30, 34 radio locations were collected on W8550 (fig. 4). Since dens are often used in subsequent years, and we are concerned about disruption of the densite, we do not present landmarks or UTM grids in figure 4.

The homesite of the Magic Pack was along the floodplain of the North Fork of the Flathead River. The actual homesite (i.e., den) was never spotted from the air. Its location was inferred by the repeated triangulation of W8550's radio signal within a 0.5 sq.km. area and the howling of pups from this same area.

To graph the movements of W8550 away from the homesite over time, the average point of the radio locations within the 0.5 sq. km. area was selected to represent the average location of the pups. Because of: 1) the error inherent with the homesite

Figure 2: Movements of W8401- August 28, 1984 to March 15, 1985

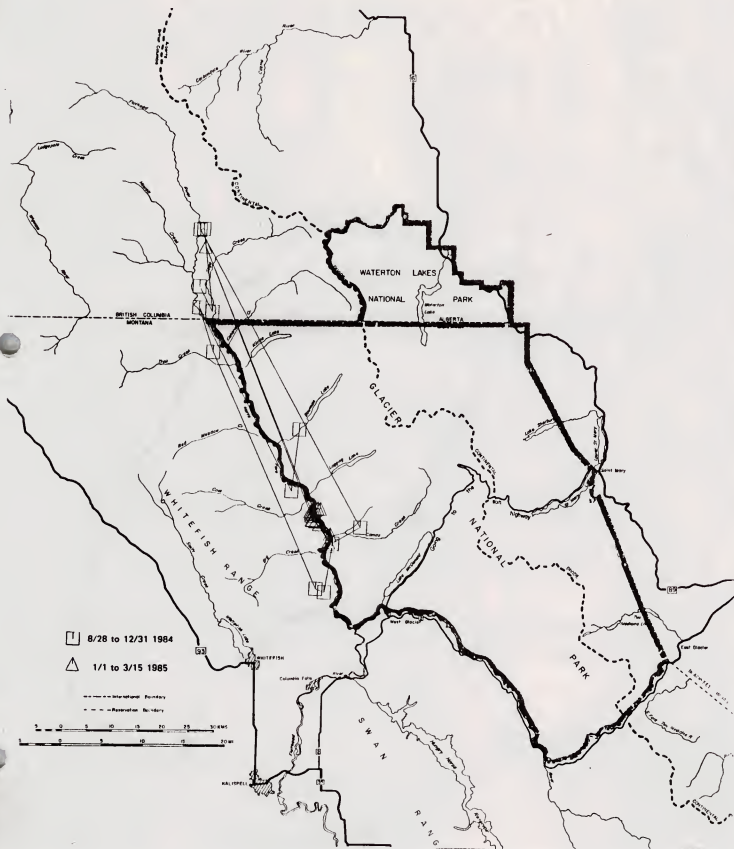
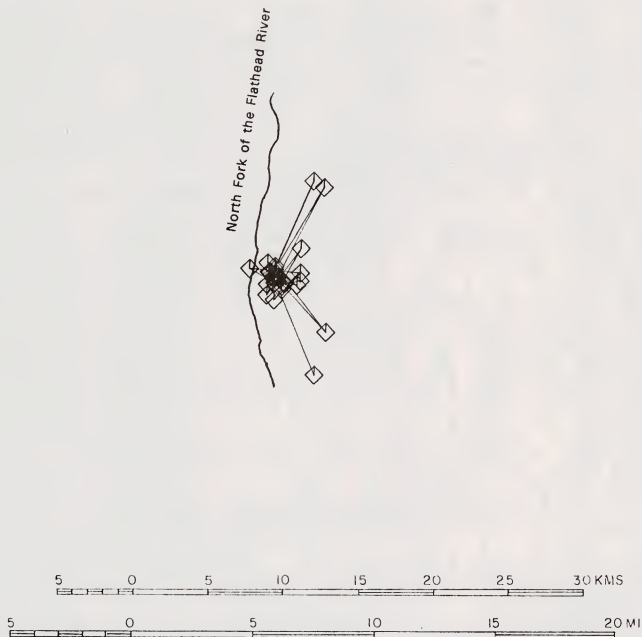


Figure 3: Movements of W8401 - March 15 to June 30, 1985



Figure 4: Movements of W8550 from May 18, 1985 to June 30, 1985

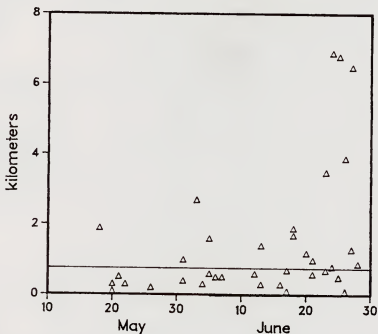


estimator, 2) the error inherent with radio locations (about a .25 km radius around each location), and 3) the mobility of the pups, computed distances of W8550 less than 0.75 km. from the calculated homesite probably represent cases when she was actually with the pups.

W8550 was usually with the pups, or at least within several kilometers, from the onset of our monitoring until about June 22. Around June 22 she abruptly began increasing the distance of her travels but still returned to the pups on a daily basis (fig. 5). At this time the pups would be about nine to eleven weeks old.

There was no apparent preference for the time of day in which W8401 did her travelling, but the sample size is small (Table 1).

Figure 5: Distance of W8550 from the homesite - 1985



6 Food Habits

Scats were collected for content and parasitological analysis only when they could be verified as being of wolf origin by accompanying tracks. Coyotes are common in the study area and there is some overlap in size between coyote and wolf scats.

One hundred and twenty wolf scats were collected through April 1985. An extremely

Table 1: Times of day W8550 was found further than 0.75 km away from homesite

Distance	Time
1.1	1850
2.7	2000
1.6	0340
1.4	0220
2.0	0330
1.7	1500
1.3	1120
1.0	0720
4.7	1200
6.9	1740
6.8	2200
1.3	0240
6.6	1315

dry May and June 1985 left the ground essentially barren of tracks so no scats have been collected during these months. Food habits for this period will be reconstructed from scats collected at the homesite after it is abandoned.

Without radios on the Magic Pack during the winter months, scats were collected opportunistically as we encountered the pack on track surveys. Scats collected during a given incident of snow tracking were pooled for analysis since these scats represented a common feeding history (i.e., were not independent).

Based on analysis completed on 59 of the scats collected from the Magic Pack, it appears that deer, elk and moose were all important components in their diet. Deer migrate out of the area where tracks of the Magic Pack were encountered but were nevertheless present in the diet throughout the fall and winter. The proportion of deer decreased in the winter diet as moose and elk increased.

Two verifiable wolf kills were found over the course of the winter. The first was an adult cow elk killed by the Magic Pack in late February. The cow showed no obvious abnormalities and had firm, white femur marrow. The five to six wolves in the pack thoroughly cleaned up the carcass in 3.5 days. The second was a young bull moose killed in late March which took the pack 4-5 days to fully consume.

7 Summary

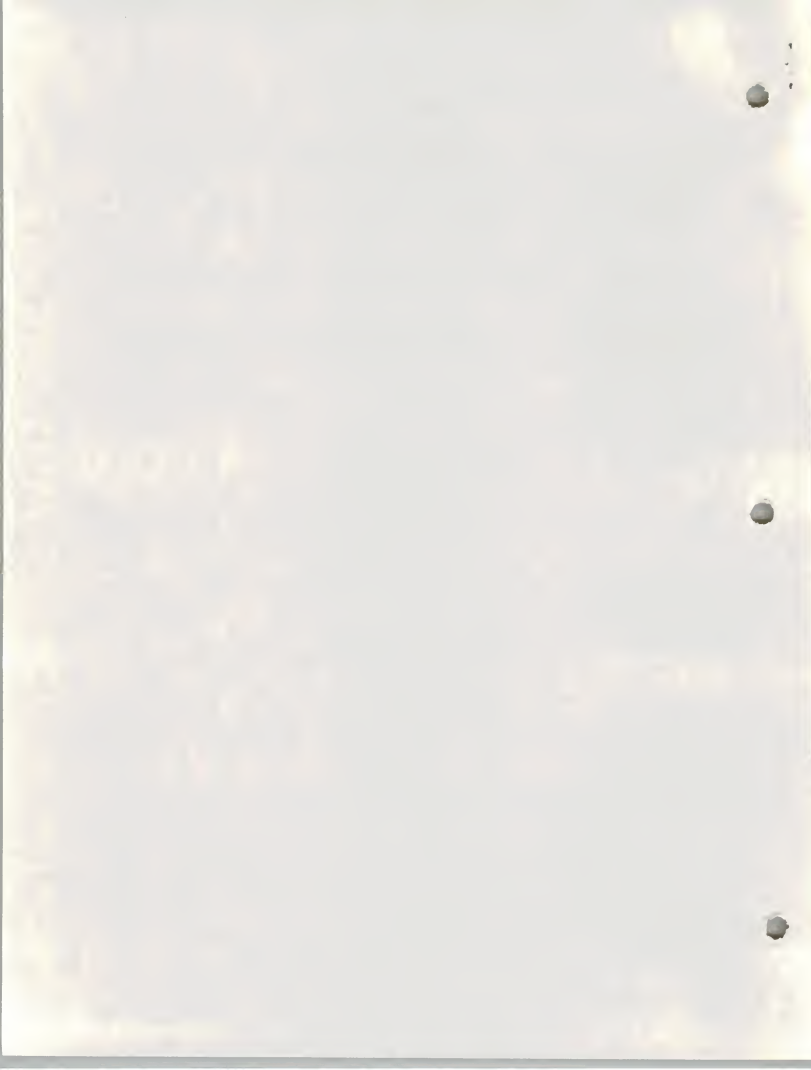
Two wolves, a young male and an alpha female, were captured and radio-collared during the past year. The female was a member of a pack (the Magic Pack) of 5-6 wolves. The territory of the Magic Pack included the northwest corner of Glacier N.P., the northeast corner of the Flathead N.F., and the southeastern corner of British Columbia. Seven pups were seen with this female in May 1985. The radio-collared young male may have been a member of the Magic Pack in fall 1984, as he was in the same area. However, he spent most of the winter and spring in Glacier N.P. about 40 km. south of the Canadian border. In late May and all of June he covered an area 80 km. east-west and 70 km. north-south, traveling great distances in short periods of time and crossing several mountain ranges.

Although only 2 definite wolf-killed ungulates were found during winter 1984-85, an elk and a moose, analysis of 59 scats collected from the Magic Pack reveals feeding on deer, elk and moose. Additional scats will be analyzed and scats will be collected at the densite after the litter leaves it this summer.

We will continue to track the 2 radio-tagged wolves and their associates during the coming year. Additional trapping will be carried out beginning in September and 6 more radio collars are ready to put out. Hopefully, some of the wolf pups will be captured so that we can follow any dispersal movements that occur by these young and learn what factors are limiting recruitment. Now that the Magic Pack is radio-tagged, we will be able to follow it more closely during the coming winter. This will also allow us to collect many more scats and find more kills. It appears that wolves are making a comeback in the North Fork Flathead area, and that we are there in time to document this recovery. We also hope to document wolf recovery in the East Glacier or other areas in the vicinity of the North Fork study area.

References

- Boyd, D. Food habits and spatial relations of coyotes and a lone wolf in the Rocky Mountains. Master's thesis, University of Montana, 1982.
- Harris, R.B. *Effects of elk migration and cattle distribution on wolf movements in southern Alberta*. Technical Report, Wolf Ecology Project, University of Montana, 1983.
- Ream, R.R. and U.I. Mattson. Wolf status in the northern Rocky Mountains. In F.H. Harrington and P.C. Pacquet (Ed.), *Wolves of the World*, Noyes Publications. Park Ridge, NJ, 1982.
- Ream, R.R., R.B. Harris, J. Smith, and D. Boyd. Movement patterns of a lone wolf in unoccupied wolf range, southeastern British Columbia. *Can. Field Natur.*, 1985, }, In Press.



5
639.9
SE-1-7
1

PLEASE RETURN

STATE DOCUMENTS COLLECTION

JOB PROGRESS REPORT

OCT 7 - 1985

RESEARCH PROJECT

MONTANA STATE LIBRARY,
1515 E. 6th AVE.
HELENA, MONTANA 59620

State: Montana

Project No. SE-1-7

Title: Statewide Endangered Species
Research

Job No. 1

Title: Northern Rocky Mountain Wolf
Investigations

Period Covered: July 1, 1984 through June 30, 1985

Prepared by: Dr. Robert R. Ream

Approved by: Glenn Erickson

Date: September 1985

Funding for this study and report is through a cooperative agreement with the State of Montana Department of Fish, Wildlife and Parks under Section 6 of the Endangered Species Act. No parts of the report may be reproduced, nor quoted without permission of the authors.



i

Table of Contents

1 Background	1
2 Acknowledgements	2
3 Introduction	4
4 Wolf Distribution and Numbers	5
4.1 Trapping and Radio Collaring	5
4.2 Track Surveys and Wolf Reports	5
4.3 Mortality	9
5 Movements of Radio-Collared Wolves	9
5.1 Wolf W8401	9
5.2 W8550	10
6 Food Habits	14
7 Summary	16

List of Figures

Figure 1: Study Area Showing Approximate Range of Magic Pack and Incidental Wolf Reports	7
Figure 2: Movements of W8401- August 28, 1984 to March 15, 1985	11
Figure 3: Movements of W8401 - March 15 to June 30, 1985	12
Figure 4: Movements of W8550 from May 18, 1985 to June 30, 1985	13
Figure 5: Distance of W8550 from the homesite - 1985	14

List of Tables

Table 1: Times of day W8550 was found further than 0.75 km away from homesite	15
---	----

WOLF ECOLOGY PROJECT ANNUAL REPORT JULY 1984 THROUGH JUNE 1985

1 Background

This annual report is the first annual report of the Wolf Ecology Project since it has been funded through the State of Montana Department of Fish, Wildlife and Parks, under Section 6 of the Endangered Species Act. Because of increasing evidence of natural wolf recovery occurring in the Glacier National Park and Flathead National Forest area in Montana and increasing evidence of wolves in Idaho, a joint proposal was submitted by the states of Montana and Idaho for Section 6 funding in 1983. Funding was approved in 1984 and the state of Montana is funding this project through the Montana Cooperative Wildlife Research Unit at the University of Montana. Dr. Robert Ream, Professor of Forestry, has directed the Wolf Ecology Project since its inception in 1973 and is directing the current effort. The remainder of this section will give background on the wolf in Montana and the Wolf Ecology Project. Those who are familiar with past work of the project should skip to the Introduction section, which covers the beginning of the current Section 6 research.

The Wolf Ecology Project was initiated in the summer of 1973 to begin to collect information on the current status of wolves in Montana. Later that year, the Northern Rocky Mountain Wolf *Canis lupus irremotus* was placed on the endangered species list. The first 6 years of the project were spent collecting information and examining areas around the state to determine if and where wolves were present (Ream and Mattson, 1982). In 1978, we received funding from the Office of Endangered Species, U.S. Fish & Wildlife Service, Washington, to initiate more intensive ecological research in the area we were most likely to find wolves present. In April 1979, a female wolf was captured and radio-tagged in the North Fork Flathead River drainage about 6 miles northwest of Glacier National Park (Ream and Mattson, 1982). Her radio operated for 16 months, and we were able to follow her tracks in the snow the following winter (1980-81). During the 2 years she was intensively followed, we found no evidence of another wolf in the Flathead drainage (Boyd, 1982, Ream et al, 1985). In the fall of 1981 a wolf with larger tracks and black in color, showed up in the same area. The following winter, a pair of wolves was tracked in the snow and in the spring of 1982, they had a litter of at least 7 pups. Since 1982 there has been an increasing number of wolf tracks, sightings, and other sign in the

North Fork, particularly south of the Canadian border. In the winter of 1984-85 we estimate 7-10 wolves were present in the area.

2 Acknowledgements

We would like to acknowledge the support and help of individuals and organizations who have supported this project over the past 12 years. The Northern Rocky Mountain Wolf Recovery Team with Dennis Flath and Bart O'Gara as chairmen, have provided help and encouragement since the team was formed in 1974. Team member, Norton Miner, U.S. Fish & Wildlife Service in Billings, helped obtain vehicles to use in reconnaissance work early in the project. The World Wildlife Fund supported our efforts at a critical time leading to intensive field work in the Flathead area. The U.S. Fish & Wildlife Service, Office of Endangered Species in Washington D.C., particularly John Spinks, Amos Eno, and Ron Nowak, were particularly helpful in providing support and encouragement during the intensive ecological work from 1978-1981. The Alberta Fish and Wildlife Service, through John Gunson, funded an investigation in the Livingstone Range in 1981-82, at a time when it appeared that we only had one wolf in the North Fork and that was the nearest area with breeding pairs (Harris, 1983). Cliff Martinka, Glacier National Park, put some project personnel on volunteer status in recent years. Ron Marcoux and Glen Erickson, Montana Department of Fish, Wildlife and Parks, were very helpful in obtaining the Section 6 funding that supports our current efforts. The School of Forestry and Montana Cooperative Wildlife Research Unit, have supported our efforts in many ways over the past 12 years. Ken Wall, with the University of Montana Wilderness Institute, has been very kind to tutor us in the use of the computer facilities on campus.

The following biologists, in chronological order, have been on the project payroll: Gary Day, Ursula Mattson, Joe Smith, Diane Boyd, Rich Harris and Mike Fairchild. All have worked many hours beyond those they were paid for. Diane Boyd and Ursula Matson continued to collect data and information during the years when they were not on the payroll and Diane has settled in the North Fork study area.

The project could not have collected the amount of information it has without the aid of numerous volunteers and work-study students. These include: Russ Beuch, Pam Broussard, Dennis Daneke, Mike Fairchild, Sharon Gaughan, Karen Gelman, Rich Harris, Ann Henry, Rob Jensen, Rick Johnson, Gina Mariani, Dean Marsh, Jill Reifschneider, Carol

Schmidt, Mike Sickles, and Heidi Svoboda. All have spent at least one quarter of a year working in the field. Many other individuals have contributed days, and weeks, to helping the field work in a variety of ways.

A number of individuals and agencies in the study area deserve special mention for their contributions to this research effort. Personnel of the Glacier View Ranger District, Flathead National Forest, have been most helpful in providing maps, advice and logistic support, particularly Rangers Dick Call and Tom Hope, and Wildlife Biologist Bruce Hird. Bob Hensler, Wildlife Biologist in the Supervisor's office has assisted in numerous ways.

Jerry DeSanto, District Ranger, Glacier National Park, has assisted the project over the past 5 years by making valuable observations of wolf tracks in winter, by making several cabins available for winter use, and by sharing his vast knowledge of the park. Research Biologist Cliff Martinka has provided a considerable amount of advice and logistic support to the project over the years.

Montana Department of Fish, Wildlife and Parks regional supervisor Tom Hay and biologist Jim Cross have been very helpful to project personnel in a variety of ways.

Doing research on animals as far-ranging as wolves is somewhat complicated by the fact that the study area and the wolves straddle an international border. We greatly appreciate the kindness and understanding shown to project personnel by both U.S. and Canadian customs and immigration services personnel.

We also greatly appreciate the use of cabins at Moose City that have been most generously offered for our use by George Ostrom and the Moose City property owner's association. Use of the cabins and the airstrip has greatly facilitated project work.

British Columbia Fish and Wildlife Branch regional biologist Ray DeMarchi has been most helpful to the project in obtaining permits and providing logistic support. Over the past 6 years, Border Grizzly Project field personnel, and director Dr. Charles Jonkel, have had a close working relationship with this project, at times sharing the same cabin. All have been most helpful.

Finally, we need to give a very special thanks to Bruce McLellan and his wife Celine.

They have contributed so much to the wolf project over the years that we consider them part of it. Bruce has been studying grizzly bears in the same area for 8 years, and has provided us with some of the most basic information that has kept our research going, even in years when we lacked funding. He most recently captured and radio-tagged a lactating female wolf on May 18, 1985, using one of our collars. Bruce and Celine's friendship and support has been greatly appreciated by all wolf project personnel.

3 Introduction

A continuing goal of the project is to determine wolf population size and distribution in northwest Montana. Wolves dispersing from Canada provide the only opportunity for natural recovery of wolves in the U.S. Rockies. In the event that recovery is achieved, Canadian wolves in the border region will still strongly influence the ecology of wolves in the U.S. Thus the study area, like the wolves themselves, straddles the international border.

Similar resource development projects (e.g., logging, oil and gas exploration) in progress immediately north of the border are proposed for many areas of the U.S. within potential wolf range. American land managers have the opportunity to develop guidelines for coordinating resource development with wolf recovery from essentially the same ecosystem.

Additional goals of the project are to learn more about the ecology of wolves in the northwest Montana ecosystem. Special emphasis is placed on learning more about the food habits and prey base of wolves in this area. We must try to document those aspects of wolf ecology that might cause controversy, such as competition with human hunters and livestock depredation.

Radio-telemetry has proven to be the only tool to objectively study free-ranging wolves in this area. Telemetry provides the capability of monitoring an animal at a reasonable distance to avoid disturbing it. During this early phase of wolf recovery in the U.S. we are being particularly careful not to "push" radio collared wolves out of the areas that they select as part of their home range. Tracking is done from roads and trails where possible, but lack of roads in much of the study area and great distances travelled by wolves necessitates tracking from an airplane. Without telemetry, there would have been no way to accurately document wolf movements in the study area during the past year.

4 Wolf Distribution and Numbers

4.1 Trapping and Radio Collaring

Following several wolf sightings and numerous wolf reports on the British Columbia side of the North Fork of the Flathead River Valley, a trap line was set out in mid-August 1984. One hundred and fifty-five trap nights culminated in the capture of a young adult male wolf (W8401) on August 26.

Trapping attempts resumed in October and November, during a brief warm period in February, and late March to late May without a successful capture. A black wolf was caught on March 25 but pulled free of the trap upon the approach of the trapper.

On May 18, 1985 Canadian bear biologist Bruce McLellan captured a white, lactating female wolf (W8550) in a bear snare about ten km. north of the border in the North Fork. He obtained a wolf radio collar from our camp and collared her before release.

We located W8550 from an airplane on May 26 and observed her nursing seven pups. All wolf traps were pulled from the study area at the end of May to avoid any possibility of capturing pups while they were still small. Trapping will resume in September 1985 when the pups will be large enough to wear radio collars.

4.2 Track Surveys and Wolf Reports

Although W8550 was not radio tagged until May 1985, the presence of her pack was well established since the previous autumn. The same persistent snows and cold temperatures which hampered trapping provided good, continuous opportunities for track surveys. The tracks of this pack (a.k.a. "the Magic Pack") were encountered regularly from mid-October through the present on both sides of the international border (fig 1). Track counts of the Magic Pack totaled four to six wolves throughout the winter of 1984-85.

Snow tracking and aerial observations of W8401 indicated that he was alternately paired and alone from November 1984 to June 1985. In late November W8401 was radio tracked to a moose carcass about fifteen miles north of Columbia Falls, MT. Tracks of two wolves were seen leaving the feeding site. Tracks of a pair were again found in early December in the border area that W8401 was frequenting at the time. On December 31,

W8401 was seen from the air lying alone in the middle of a 10 ha.(24 acre) clearing. Tracks in the snow implied that he was alone. Ground tracking W8401 through January and February usually turned up just a single set of tracks. There were times, though, that it seemed possible that tracks of a second wolf could be present amidst the numerous ungulate tracks without being detected.

Tracks of a second wolf were verified alongside W8401's throughout March and April 1985. On a May 18 radio tracking flight, W8401 was observed with another wolf. The two were lying in a large meadow 10 km. north of Polebridge Ranger Station in Glacier National Park.

On June 10, W8401 was radio tracked near Goat Haunt Ranger Station, Glacier N. P. Independent track reports of a single wolf in the vicinity of Goat Haunt R. S. during the same time period strongly suggests that W8401 was present alone. On June 21, W8401 was seen on a radio tracking flight walking alone out of the forest about 100 meters and lying down at the edge of an aspen grove.

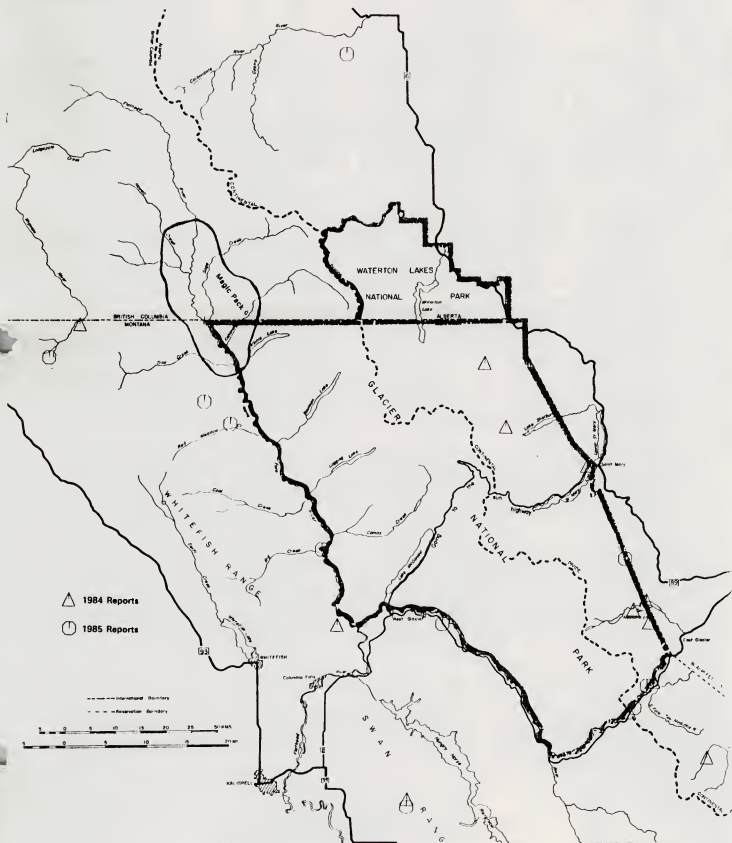
Additional wolf track surveys were conducted while snow cover was present. Surveys were made on the Glacier View Ranger District, Flathead National Forest, up the Trail, Teepee, Whale, Moose, Red Meadow, Hay, Coal and Big Creek Drainages. Tracks of a single wolf, probably W8401, were discovered up Big Creek on March 9. He had been previously radio located several miles on either side of the Big Creek tracks and was found only five miles away on March 10.

Several wolf track and sighting reports were received from North Fork of the Flathead residents (fig 1). Where access was granted to project personnel to investigate these reports, no evidence substantiating the presence of wolves other than W8401, his intermittent partner, and the Magic Pack was collected during winter 1984-85.

Wolf reports have irregularly, but persistently, trickled in from the region of the Swan Range, east of Kalispell. A small portion of the Swan Front was reconnoitered from March 4-6, including Krause Creek, Noisy Creek, Wolf Creek, Bear Creek and Peter's Ridge. A lot of coyote, but no wolf tracks, were seen during this brief survey.

Tracks of a pair of wolves were reported on November 17 and 24, 1984 and April 9,

Figure 1: Study Area Showing Approximate Range of Magic Pack and Incidental Wolf Reports



1985 in the vicinity of East Glacier, MT., by Ursula and Dick Mattson. Numerous other individuals have reported wolf sightings along the eastern and southern periphery of Glacier N. P. and on the adjacent Blackfeet Indian Reservation and the U. S. Forest Service lands.

We examined some of this vast region from April 26 through May 6, 1985. Fresh wolf tracks and scats were found along the eastern boundary of the park during this survey. A return trip to the area from June 16 to 21 failed to turn up additional sign or solicit responses to howling. However, conditions were extremely poor (i.e., dry) for tracks and access difficult to many potential homesite habitats. Chances are excellent that a pack exists along the eastern periphery of Glacier National Park.

While radio tracking W8401 into the Wigwam River drainage, just west of the North Fork of the Flathead, we talked with an outfitter who claimed to have seen tracks of a wolf pack throughout the winter of 1983-84. He did not see wolf tracks in the Wigwam during this past winter of 1984-85. Without radio collars on any Magic Pack members during the previous winters we could not tell whether the wolves in the Wigwam and North Fork were the same. This will be investigated during the coming year. Since the headwaters of the Wigwam lie in the United States another breeding unit there could be especially important to wolf recovery in the U.S.

In June 1985, students of a wolf ecology class offered by the Wildlands Research Institute, San Francisco State University, visited the North Fork of the Flathead. Led by Ursula Mattson, they performed a series of surveys in the North Fork for wolf sign.

From June 15 -20 they surveyed the northern portion of the Flathead Valley, north of the known range of the Magic Pack. No wolf tracks were encountered over 46 km. of hiking on dirt roads. Five possible wolf scats (> 30 mm. diameter) were collected. No wolves responded to howling on the evenings of June 15 and 16.

The class spent three days (June 22-24) on the Glacier View Ranger District. Fifty - nine km. of surveys in the Teepee, Red Meadow, Moose, Whale, and Hornet Creek drainages failed to turn up tracks. Several large canid scats were seen but could not be positively identified as wolf.

The last three days of the WRI survey (June 25-27) were spent in the northwest corner of Glacier N. P. Fifty-six km. of hiking by the group resulted in the discovery of very fresh wolf tracks by one to two wolves. These tracks were found within the previously defined range of the Magic Pack.

4.3 Mortality

No cases of wolf mortality have been documented during the past year. The wolf report that prompted last summer's trapping effort was of six pups. The previous year no pups were reported and in 1982 seven pups were seen. Thus, at least thirteen pups have been born in the territory of the Magic Pack from 1982 to 1984. An adult male affiliated with the 1982 litter was killed in a trapping incident in the summer of 1982. At most, there seemed to be 7-10 wolves in the North Fork during the winter of 1985 out of a potential of 14. The difference may be due to mortality, dispersal, and/or miscounting. There was one unconfirmed report of a wolf being shot in the North Fork, B.C. in October, 1984.

It is currently unlawful to kill wolves in hunting districts 4-1 and 4-2 of the B. C. Fish and Wildlife Branch which contain the Canadian portions of the North Fork of the Flathead and Wigwam River watersheds.

The province of Alberta allows licensed big game hunters to shoot one wolf and licensed trappers to take wolves.

The Endangered Species Act gives legal protection to wolves on the U. S. side of the border.

5 Movements of Radio-Collared Wolves

5.1 Wolf W8401

W8401 was captured in the North fork of the Flathead drainage, approximately seven km. north of the U. S. - Canadian border. Seventy-four radio locations of W8401 range from 20 km. north to 50 km. south of the border from capture to June 30, 1985.

The capture point of W8401 was in the heart of what was later defined as the territory of the Magic Pack. In fact, he was captured less than one km. away from W8550's

eventual capture site and right between two Magic Pack homesites of 1982 and 1985. Wolves were seen by an oil company engineer crossing the road very near W8401's capture site in July 1984. Thus, it seems highly probable that W8401 represents one of the first pups of the Magic Pack to mature and disperse.

Fall to early winter radio locations on W8401 show him "bouncing" back and forth between the Magic Pack territory and various long distance forays (fig. 2).

From January to mid-March 1985, W8401 primarily inhabited a white-tailed deer and elk winter range in Glacier N. P. 14 km. south of Polebridge Ranger Station.

With decreasing snow depths and dispersal of prey species in late March, W8401 began expanding the extent of his movements. For the next two months he and his partner remained in Glacier N. P. travelling up and down the North Fork (fig. 3).

On May 20, W8401 began a series of long distance moves which took him to the Wigwam River in Canada, back to the interior of Glacier N.P. (near Logan Pass), north to Waterton Lake, and back to the North Fork. After a week's stay in the area near Polebridge, W8401 traveled to the headwaters of the North Fork where he remained for the duration of this report period

5.2 W8550

As previously mentioned, W8550 was trapped in a bear snare on May 18, 1985. From May 18 through June 30, 34 radio locations were collected on W8550 (fig. 4). Since dens are often used in subsequent years, and we are concerned about disruption of the densite, we do not present landmarks or UTM grids in figure 4.

The homesite of the Magic Pack was along the floodplain of the North Fork of the Flathead River. The actual homesite (i.e., den) was never spotted from the air. Its location was inferred by the repeated triangulation of W8550's radio signal within a 0.5 sq.km. area and the howling of pups from this same area.

To graph the movements of W8550 away from the homesite over time, the average point of the radio locations within the 0.5 sq. km. area was selected to represent the average location of the pups. Because of: 1) the error inherent with the homesite

Figure 2: Movements of W8401- August 28, 1984 to March 15, 1985

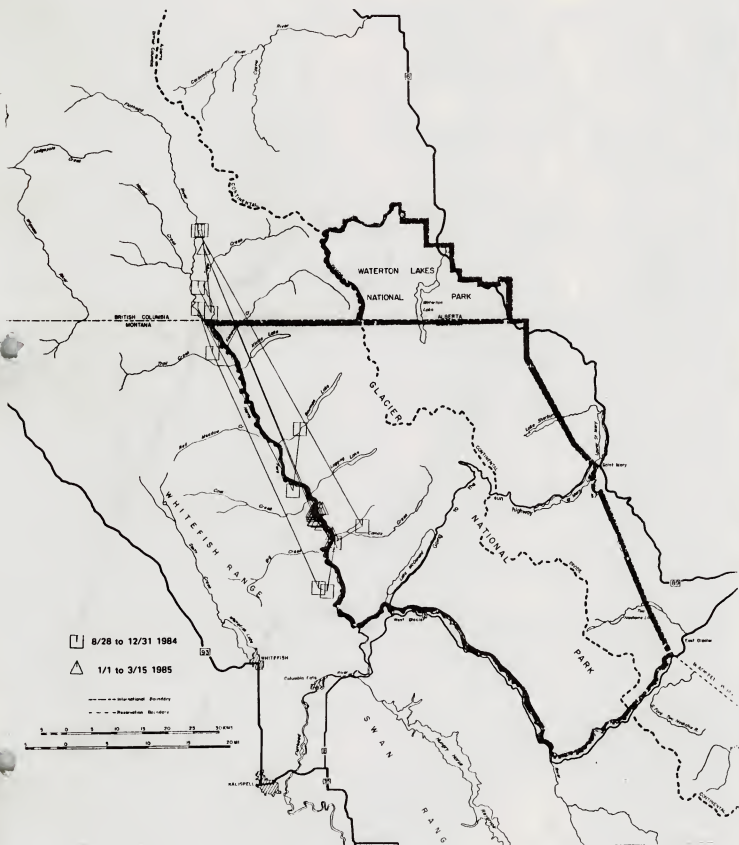


Figure 3: Movements of W8401 - March 15 to June 30, 1985

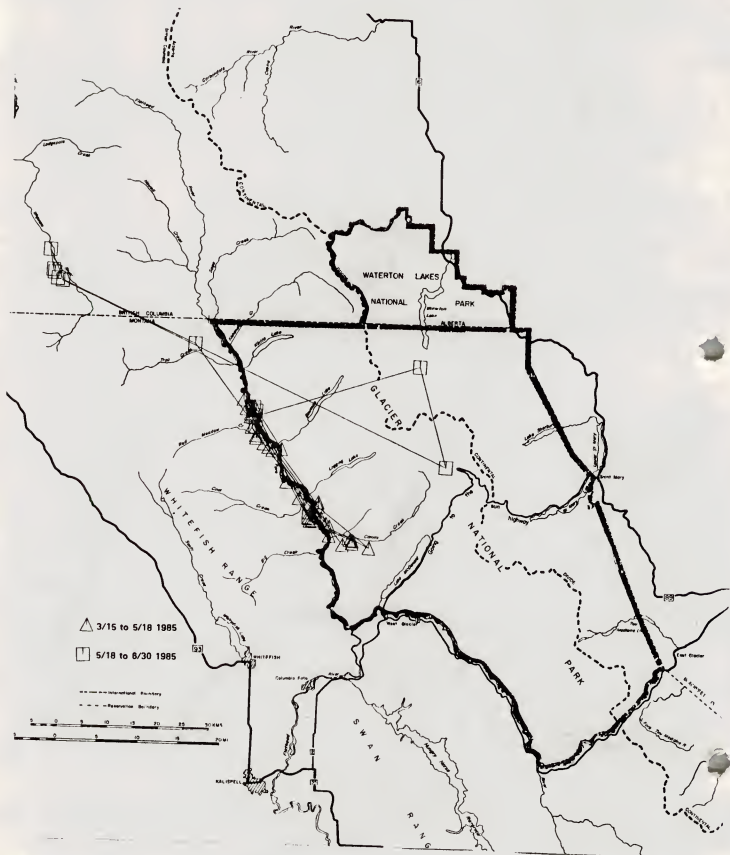
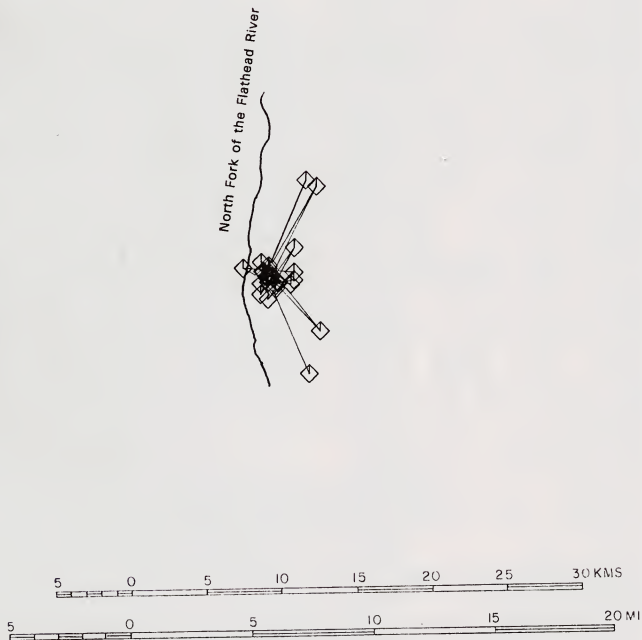


Figure 4: Movements of W8550 from May 18, 1985 to June 30, 1985

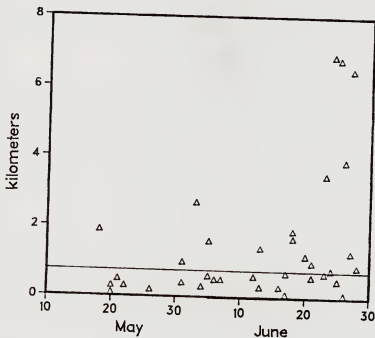


estimator, 2) the error inherent with radio locations (about a .25 km radius around each location), and 3) the mobility of the pups, computed distances of W8550 less than 0.75 km. from the calculated homesite probably represent cases when she was actually with the pups.

W8550 was usually with the pups, or at least within several kilometers, from the onset of our monitoring until about June 22. Around June 22 she abruptly began increasing the distance of her travels but still returned to the pups on a daily basis (fig. 5). At this time the pups would be about nine to eleven weeks old.

There was no apparent preference for the time of day in which W8401 did her travelling, but the sample size is small (Table 1).

Figure 5: Distance of W8550 from the homesite - 1985



6 Food Habits

Scats were collected for content and parasitological analysis only when they could be verified as being of wolf origin by accompanying tracks. Coyotes are common in the study area and there is some overlap in size between coyote and wolf scats.

One hundred and twenty wolf scats were collected through April 1985. An extremely

Table 1: Times of day W8550 was found further than 0.75 km away from homesite

Distance	Time
1.1	1850
2.7	2000
1.6	0340
1.4	0220
2.0	0330
1.7	1500
1.3	1120
1.0	0720
4.7	1200
6.9	1740
6.8	2200
1.3	0240
6.6	1315

dry May and June 1985 left the ground essentially barren of tracks so no scats have been collected during these months. Food habits for this period will be reconstructed from scats collected at the homesite after it is abandoned.

Without radios on the Magic Pack during the winter months, scats were collected opportunistically as we encountered the pack on track surveys. Scats collected during a given incident of snow tracking were pooled for analysis since these scats represented a common feeding history (i.e., were not independent).

Based on analysis completed on 59 of the scats collected from the Magic Pack, it appears that deer, elk and moose were all important components in their diet. Deer migrate out of the area where tracks of the Magic Pack were encountered but were nevertheless present in the diet throughout the fall and winter. The proportion of deer decreased in the winter diet as moose and elk increased.

Two verifiable wolf kills were found over the course of the winter. The first was an adult cow elk killed by the Magic Pack in late February. The cow showed no obvious abnormalities and had firm, white femur marrow. The five to six wolves in the pack thoroughly cleaned up the carcass in 3.5 days. The second was a young bull moose killed in late March which took the pack 4-5 days to fully consume.

7 Summary

Two wolves, a young male and an alpha female, were captured and radio-collared during the past year. The female was a member of a pack (the Magic Pack) of 5-6 wolves. The territory of the Magic Pack included the northwest corner of Glacier N.P., the northeast corner of the Flathead N.F., and the southeastern corner of British Columbia. Seven pups were seen with this female in May 1985. The radio-collared young male may have been a member of the Magic Pack in fall 1984, as he was in the same area. However, he spent most of the winter and spring in Glacier N.P. about 40 km. south of the Canadian border. In late May and all of June he covered an area 80 km. east-west and 70 km. north-south, traveling great distances in short periods of time and crossing several mountain ranges.

Although only 2 definite wolf-killed ungulates were found during winter 1984-85, an elk and a moose, analysis of 59 scats collected from the Magic Pack reveals feeding on deer, elk and moose. Additional scats will be analyzed and scats will be collected at the densite after the litter leaves it this summer.

We will continue to track the 2 radio-tagged wolves and their associates during the coming year. Additional trapping will be carried out beginning in September and 6 more radio collars are ready to put out. Hopefully, some of the wolf pups will be captured so that we can follow any dispersal movements that occur by these young and learn what factors are limiting recruitment. Now that the Magic Pack is radio-tagged, we will be able to follow it more closely during the coming winter. This will also allow us to collect many more scats and find more kills. It appears that wolves are making a comeback in the North Fork Flathead area, and that we are there in time to document this recovery. We also hope to document wolf recovery in the East Glacier or other areas in the vicinity of the North Fork study area.

References

- Boyd, D. Food habits and spatial relations of coyotes and a lone wolf in the Rocky Mountains. Master's thesis, University of Montana, 1982.
- Harris, R.B. *Effects of elk migration and cattle distribution on wolf movements in southern Alberta*. Technical Report, Wolf Ecology Project, University of Montana, 1983.
- Ream, R.R. and U.I. Mattson. Wolf status in the northern Rocky Mountains. In F.H. Harrington and P.C. Pacquet (Ed.), *Wolves of the World*, Noyes Publications. Park Ridge, NJ, 1982.
- Ream, R.R., R.B. Harris, J. Smith, and D. Boyd. Movement patterns of a lone wolf in unoccupied wolf range, southeastern British Columbia. *Can. Field Natur.*, 1985, }, In Press.

